Claims

1. A printing machine for printing a substrate (1) in the form of a sheet or continuous web, said substrate being intended to receive at least one impression, comprising at least one transfer system (5) for conveying the substrate (1) onto an impression cylinder (6), at least one screen (7, 8) of cylindrical or flat shape, the screen collaborating with the impression cylinder (6) and intended to print the substrate by screen-printing with an ink containing pigments that can be orientated by a magnetic field and an unloading system (9) for carrying the substrate (1) away after the printing operation, wherein said impression cylinder comprises at least one magnetic element (12, 13, 14) on its printing surface, said magnetic element being placed at a location corresponding to said impression on said substrate performed by said screen (7, 8).

2. The printing machine as claimed in claim 1, in which the substrate (1) receives a plurality of impressions arranged in the form of a matrix and wherein the impression cylinder comprises a plurality of magnetic elements (12, 13, 14) arranged in a corresponding matrix form.

3. A printing machine for printing a substrate (1) in the form of a sheet or continuous web, said substrate being intended to receive at least one impression, comprising at least one transfer system (5) for conveying the substrate (1) onto an impression cylinder (6), at least one screen (7, 8) of cylindrical or flat shape, the screen collaborating with the impression cylinder (6) and intended to print the substrate by screen-printing with an ink containing pigments that can be orientated by a magnetic field and an unloading system (9) for carrying the substrate (1) away after

the printing operation, wherein the unloading system comprises a cylinder (57, 58) having at least one magnetic element (59, 60) on its surface, said magnetic element being placed at a location corresponding to said impression on said substrate performed by said screen (7, 8).

4. The printing machine as claimed in claim 3, in which said cylinder is an unloading cylinder (57).

5. The printing machine as claimed in claim 3, in which said cylinder is an intermediate cylinder (58).

6. The printing machine as claimed in one of the preceding claims, in which said magnetic element or elements (12, 13, 14, 59, 60) create a magnetic field in a predetermined direction.

7. The printing machine as claimed in claim 6, in which said magnetic element or elements are orientated in a direction parallel and/or perpendicular to the direction of travel of the substrate.

8. A cylinder (6, 57, 58) for printing or transferring a substrate (1) in the form of a sheet or continuous web, said substrate being intended to receive at least one screen-printed impression with an ink containing pigments that can be orientated by a magnetic field, which cylinder comprises at least one magnetic element (12, 13, 14, 59, 60) on its surface to orientate the pigments of said ink, and wherein said at least one magnetic element (12, 13, 14, 59, 60) is covered by a sheet (24) of non-magnetic material.

9. The cylinder as claimed in claim 8, wherein said sheet (24) is made of aluminum or of stainless steel.

10. The printing machine as claimed in either of

claims 1 and 3, wherein the impression cylinder (6) or the cylinder of the unloading system (57, 58) is a cylinder as defined in claim 8 or 9.

11. A method for screen-printing a substrate in the form of a sheet or of a web in which an impression is formed using an ink containing magnetic pigments, wherein said impression is subjected to a magnetic field before it dries so as to orientate said pigments.

12. The printing method as claimed in claim 11, in which the magnetic field orientates the pigments in a predetermined direction.

13. The printing method as claimed in claim 12, in which the pigments are orientated parallel and/or perpendicular to the direction of travel of the substrate.

14. The printing method as claimed in one of claims 11 to 13, in which a first impression is formed on the substrate using an ink with varying optical effect, said impression is subjected to a first magnetic field orientating the pigments in a first direction, said first impression is dried, a second impression is formed on the first impression using an ink with varying optical effect, said second impression is subjected to a second magnetic field orientating the pigments in a second direction, and said second impression is dried.

15. The method as claimed in claim 14, in which the first direction and the second direction are different.

16. The method as claimed in one of claims 11 to 15, in which said impression comprises a plurality of individual impressions arranged in matrix form.

17. The method as claimed in claim 11, wherein said impression is formed by passing said substrate in contact with an impression cylinder (6) with which there collaborates at least one screen (7, 8) of cylindrical or flat shape for screen-printing said ink.